

## **Agrium Conda Phosphate Operations**

### **Agrium's Response to EPA's Letter Dated August 31, 2005**

Agrium asserts a claim of confidentiality with respect to the information contained herein. The information to which this confidentiality claim applies constitutes trade secret, privileged or confidential commercial or financial information, and/or information specifically exempted from disclosure by statute. Such information has been maintained in confidence by Agrium and is not reasonably obtainable by use of legitimate means without Agrium's consent, and Agrium intends to continue its existing practice of protecting the confidentiality of all information subject to this claim of confidentiality.

Public disclosure of the information for which Agrium asserts this confidentiality claim would cause substantial harm to Agrium's competitive position. Furthermore, the information to which this claim applies does not constitute emission data, standards or limitations within the meaning of Clean Air Act §114(c), or other similar relevant federal and/or state provisions. This information includes commercial and/or financial-related information regarding confidential, commercially valuable plans, processes or devices. Because Agrium's business is highly competitive in nature, the disclosure of any such information would substantially harm Agrium's business position by depriving it of an advantage inherent in such information, and/or by providing Agrium's competitors with the ability to derive a benefit from such information to Agrium's detriment. For example, certain information to which this claim applies potentially could be used by Agrium's competitors to project Agrium's future production and/or pricing patterns, to gain insight into Agrium's proprietary process designs and/or production and marketing strategies, and/or to negatively influence public/consumer perceptions of Agrium and Agrium products.

In the event that EPA, or the Idaho Department of Environmental Quality ("IDEQ") receives a request for public disclosure of any information contained herein, Agrium requests that EPA and/or IDEQ notify Agrium immediately upon receiving any such request, notify Agrium of any determination by EPA and/or IDEQ with respect to the confidentiality of such information, and provide Agrium an opportunity to comment regarding any such EPA/IDEQ determination prior to the public disclosure of the requested information.

BATES PREFIX	BEG BATES	END BATES	DATE	DOC TYPE	AUTHOR	RECIPIENT	DESCRIPTION
AGR-CBI	002038	002038		File Cover			File cover sheet, "North End Wash Plant" (documents located at AGR-CBI 002038-002147)
AGR-CBI	002039	002039		File Cover			Sub-File cover sheet, "Normal Operations" (documents located at AGR-CBI 002039-002095)
AGR-CBI	002040	002042	2/28/2003	SOPs	Agrium Conda Phosphate Operations		Standard Operating Procedures: Wash Plant, Taking Cyclone Density Readings
AGR-CBI	002043	002046	2/28/2003	SOPs	Agrium Conda Phosphate Operations		Standard Operating Procedures: Wash Plant, Normal Operation For Wash Plant "A" Operator
AGR-CBI	002047	002049	2/28/2003	SOPs	Agrium Conda Phosphate Operations		Standard Operating Procedures: Wash Plant, Tailings Pump Switching
AGR-CBI	002050	002052	2/28/2003	SOPs	Agrium Conda Phosphate Operations		Standard Operating Procedures: Wash Plant, Wash Plant "B" Operator Normal Operation
AGR-CBI	002053	002055	3/3/2004	SOPs	Agrium Conda Phosphate Operations		Standard Operating Procedures: Wash Plant, Recharging The Rod Mill
AGR-CBI	002056	002058	2/28/2003	SOPs	Agrium Conda Phosphate Operations		Standard Operating Procedures: Wash Plant, Using Rod Mill Inch Drive
AGR-CBI	002059	002061	2/28/2003	SOPs	Agrium Conda Phosphate Operations		Standard Operating Procedures: Wash Plant, Reclaiming Washed Ore Across #7 Belt
AGR-CBI	002062	002065	2/28/2003	SOPs	Agrium Conda Phosphate Operations		Standard Operating Procedures: Wash Plant, Changing Extractors
AGR-CBI	002066	002068	2/28/2003	SOPs	Agrium Conda Phosphate Operations		Standard Operating Procedures: Wash Plant, #7 Belt Operation
AGR-CBI	002069	002071	2/28/2003	SOPs	Agrium Conda Phosphate Operations		Standard Operating Procedures: Wash Plant, 3rd Stage Cyclone Operation
AGR-CBI	002072	002074	2/28/2003	SOPs	Agrium Conda Phosphate Operations		Standard Operating Procedures: Wash Plant, Putting Salt in the Brine Tank
AGR-CBI	002075	002077	2/28/2003	SOPs	Agrium Conda Phosphate Operations		Standard Operating Procedures: Wash Plant, Vacuum Pump Softener System
AGR-CBI	002078	002080	2/28/2003	SOPs	Agrium Conda Phosphate Operations		Standard Operating Procedures: Wash Plant, North and South Hoist Operation
AGR-CBI	002081	002083	2/28/2003	SOPs	Agrium Conda Phosphate Operations		Standard Operating Procedures: Wash Plant, Filling Ball Mill Feed Bin
AGR-CBI	002084	002086	2/28/2003	SOPs	Agrium Conda Phosphate Operations		Standard Operating Procedures: Wash Plant, Filling And Emptying Raw Ore Feed Bin
AGR-CBI	002087	002089	2/28/2003	SOPs	Agrium Conda Phosphate Operations		Standard Operating Procedures: Wash Plant, Metal Detector Operation

BATES PREFIX	BEG BATES	END BATES	DATE	DOC TYPE	AUTHOR	RECIPIENT	DESCRIPTION
AGR-CBI	002090	002092	2/28/2003	SOPs	Agrium Conda Phosphate Operations		Standard Operating Procedures: Wash Plant, Extractor Operation
AGR-CBI	002093	002095	2/28/2003	SOPs	Agrium Conda Phosphate Operations		Standard Operating Procedures: Wash Plant, Rod Mill Oversize Magnet
AGR-CBI	002096	002096		File Cover			Sub-File cover sheet, "Start-Ups" (documents located at AGR-CBI 002096-002124)
AGR-CBI	002097	002100	3/3/2004	SOPs	Agrium Conda Phosphate Operations		Standard Operating Procedures: Wash Plant, Starting Vacuum Pumps
AGR-CBI	002101	002103	2/28/2003	SOPs	Agrium Conda Phosphate Operations		Standard Operating Procedures: Wash Plant, Starting the Rod Mill
AGR-CBI	002104	002109	2/28/2003	SOPs	Agrium Conda Phosphate Operations		Standard Operating Procedures: Wash Plant, Start Up after Turnaround
AGR-CBI	002110	002113	2/28/2003	SOPs	Agrium Conda Phosphate Operations		Standard Operating Procedures: Wash Plant, Starting Upright Compressors
AGR-CBI	002114	002117	2/28/2003	SOPs	Agrium Conda Phosphate Operations		Standard Operating Procedures: Wash Plant, Starting Ore Scrubber
AGR-CBI	002118	002124	2/28/2003	SOPs	Agrium Conda Phosphate Operations		Standard Operating Procedures: Wash Plant, Normal Start Up
AGR-CBI	002125	002125		File Cover			Sub-File cover sheet, "Shut Downs" (documents located at AGR-CBI 002125-002147)
AGR-CBI	002126	002128	2/28/2003	SOPs	Agrium Conda Phosphate Operations		Standard Operating Procedures: Wash Plant, Critical Equipment Failures
AGR-CBI	002129	002133	2/28/2003	SOPs	Agrium Conda Phosphate Operations		Standard Operating Procedures: Wash Plant, Normal Shut Down
AGR-CBI	002134	002136	2/28/2003	SOPs	Agrium Conda Phosphate Operations		Standard Operating Procedures: Wash Plant, Reclaim Water Outages
AGR-CBI	002137	002139	2/28/2003	SOPs	Agrium Conda Phosphate Operations		Standard Operating Procedures: Wash Plant, Power Failure
AGR-CBI	002140	002142	2/28/2003	SOPs	Agrium Conda Phosphate Operations		Standard Operating Procedures: Wash Plant, Emergency Shut Down
AGR-CBI	002143	002147	2/28/2003	SOPs	Agrium Conda Phosphate Operations		Standard Operating Procedures: Wash Plant, Long Term Shut Down



North End  
Wash Plant



Normal Operations

AGR-CBI\_002039

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*Conda Phosphate Operations*  
**Standard Operating Procedures**

**Wash plant**

**Taking Cyclone Density Readings**

**Wash plant-01**  
**2/28/03**

Reviewed by: \_\_\_\_\_

Date: \_\_\_\_\_

**Objective:** Perform the proper steps to successfully take cyclone density readings.

**Requirements:** Wash plant A & B/ need to have a basic working knowledge of the Wash plant process.

**Required Documents:** N/A

**Tools and Equipment:** Rubber gloves

PPE	Hazards	Environmental Considerations
<ul style="list-style-type: none"><li>• Hardhat</li><li>• Safety glasses</li><li>• Hearing protection</li><li>• Safety toed footwear</li><li>• Rubber gloves</li></ul>	<ul style="list-style-type: none"><li>• Pressurized Slurry lines.</li></ul>	

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**AGR-CBI\_002040**

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## Taking cyclone density

### TASKS:

1. Taking density grab readings.
2. Recording density readings.

### NOTE

**CYCLONE DENSITIES ARE TAKEN TO MEASURE OVERFLOW AND UNDERFLOW SOLIDS. READINGS ARE TAKEN ON ALL THREE STAGES OF CYCLONE BANKS. 2.6 SCALE IS USED ON THE DENSITY METER.**

Steps		Key Points	PPE/Hazards
1.	Fill a container with cyclone overflow.		
2.	Dump container into density cup to the weep holes.		
3.	Use the 2.6 scale on the density meter.		
4.	Record density measurement.		

### NOTE

**CYCLONE UNDERFLOWS ARE MEASURED THE SAME WAY AS OVERFLOW SAMPLES.**

5.	Fill container with cyclone underflow.		
6.	Dump container into density cup to the weep holes.		
7.	Use the 2.6 scale on the density meter.		
8.	Record density measurement.		

### Training Notes:

- 1.
- 2.
- 3.
- 4.
- 5.



*Conda Phosphate Operations*

## **OPERATIONS PROCEDURE ACKNOWLEDGEMENT**

With my signature I am acknowledging that I have read the procedure, I understand the procedure and that I will comply with the procedure.

**TRAINEE:** \_\_\_\_\_

**DATE:** \_\_\_\_\_





*Conda Phosphate Operations*

## Standard Operating Procedures

### Wash plant

#### Normal Operation For Wash Plant "A" Operator

Wash plant-01

2/28/03

Reviewed by: \_\_\_\_\_

Date: \_\_\_\_\_

**Objective:** To provide operating personnel with step by step instruction on Normal operation for the Wash plant "A".

**Requirements:** A and B Wash plant operators must have a basic working knowledge of the Wash plant operation.

**Required Documents:**

**Tools and Equipment:**

PPE	Hazards	Environmental Considerations
<ul style="list-style-type: none"><li>• Hardhat</li><li>• Safety glasses</li><li>• Hearing protection</li><li>• Safety toed footwear</li><li>• Work gloves</li></ul>	<ul style="list-style-type: none"><li>• Pressured pumps</li><li>• Pressured water lines</li><li>• Rotating equipment</li><li>• Moving conveyors</li></ul>	

## Wash plant "A" normal operation

### TASKS:

1. Normal Wash plant "A"/ Ball mill DCS duties.

### NOTE

**THE WASH PLANT/BALL MILL DCS "A" OPERATOR IS RESPONSIBLE FOR THE SAFE, EFFICIENT OPERATION OF THE WASH PLANT AND BALL MILL. THE "A" MUST COMMUNICATE BETWEEN THE WASH PLANT, BALL MILL "B"S, AND RECLAIM OPERATORS FOR NORMAL OPERATION TO OCCUR.**

Steps		Key Points	PPE/Hazards
1.	Monitoring Ball mill DCS computer	Refer to Ball mill DCS operator SOP	
2.	Responsible for start up and shut down of Ball mill and Wash plant operations.	Refer to start up SOP's	
3.	Maintain water balance to all sumps.		
4.	Take hourly readings from Ball mill DCS computer, Wash plant control board and Wash plant field readings and input onto log sheet.		
5.	Change Tailings bottle at 12:30 a.m. and 12:30 p.m.	Sample to lab at 1:00 a.m.	
6.	Take 1 <sup>st</sup> , 2 <sup>nd</sup> , 3 <sup>rd</sup> , stage overflow and underflow densities.	Refer to Density SOP	
7.	Verify vacuum pump operation is normal.		
8.	Verify 3 <sup>rd</sup> stage sump level.	40"	
9.	Verify full load of feed to Scrubber.		
10.	Verify scrubber bearing water flow		
11.	Verify fresh and reclaim water flows		
12.	Verify ¼ Plus chute water flow.		
13.	Verify all pump packing is normal.	Adjust as needed.	
14.	Verify Scrubber and Rod mill pinion greasers are working.		

Wash plant "A" normal operation

Steps		Key Points	PPE/Hazards
15.	Check all cyclones, sumps, chutes, and piping for leaks.		
16.	Remove metal from Rod mill oversize belt magnet.		
17.	Verify brine tank salt level is half full and softeners are working properly.	Fill as needed. Take hardness test.	
18.	Verify upright compressors temperatures, pressures, oil levels are OK		
19.	Maintain logbook and write work orders as needed.		

Training Notes:

- 1.
- 2.
- 3.
- 4.
- 5.



*Conda Phosphate Operations*

## OPERATIONS PROCEDURE ACKNOWLEDGEMENT

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TRAINEE: \_\_\_\_\_

DATE: \_\_\_\_\_







*Conda Phosphate Operations*  
**Standard Operating Procedures**

**Wash plant**

**Tailings Pump Switching**

**Wash plant-01**  
**2/28/03**

Reviewed by: \_\_\_\_\_

Date: \_\_\_\_\_

**Objective:** To provide operations personnel with step-by-step instruction on how to switch tailings pumps

**Requirements:** Wash plant A & B/ need to have a basic working knowledge of the Wash plant process.

**Required Documents:**

**Tools and Equipment:** Pipe wrench

PPE	Hazards	Environmental Considerations
<ul style="list-style-type: none"><li>• Hardhat</li><li>• Safety glasses</li><li>• Hearing protection</li><li>• Safety toed footwear</li><li>• Work gloves</li></ul>	<ul style="list-style-type: none"><li>• Pressured pumps</li><li>• Pressured water lines</li></ul>	

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## Switching tailings pumps

### TASKS:

1. Isolating pumps.
2. Draining pumps.

### NOTE

**NORTH TAILINGS PUMP HAS A MANUAL BUTTERFLY INLET VALVE. SOUTH TAILINGS PUMP HAS A CLARKSON HYDRAULIC VALVE. BOTH DISCHARGE INTO A TECH TAYLOR BALL AND SEAT VALVE.**

### CAUTION

**WHEN HYDRAULIC LINES ARE WORKED ON OR DISCONNECTED FROM THE CLARKSON VALVES, THE HYDRAULIC PUMP MUST BE DISABLED BY RACKING OUT SWITCH GEAR HANDLE TO THE OFF POSITION ON CLARKSON CONTROL PANEL ON THE COLUMN NEAR OVERSIZE ROCK SUMP ON BOTTOM FLOOR. IT THEN NEEDS TO BE LOCKED, TAGGED, AND TRIED.**

Steps		Key points	PPE/Hazards
1.	Close gland water valve to pump being switched to.		
2.	Close drain valve to pump being switched to.		
3.	Open inlet valve to pump being switched to.		
4.	Open gland water to pump being switched to.		
5.	Shut running pump off.	Allow pump to come to a complete stop	
6.	Start other pump up.	Tech Taylor valve should seat.	
7.	Close gland water valve to pump that you shut down.		
8.	Close inlet valve to pump that you shut down.		
9.	Open drain valve to pump that you shut down.		
10.	Open gland water valve to pump that you shut down.	About ¼ open.	
11.	Leave a little gland water flowing through pump that was shut down.	Flushes pump and keep from freezing.	

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Switching tailings pumps

Training Notes:

1.



*Conda Phosphate Operations*

**OPERATIONS TRAINING  
CERTIFICATION**

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**AGR-CBI\_002049**

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*Conda Phosphate Operations*

## Standard Operating Procedures

### Wash plant

#### Wash Plant "B" Operator Normal Operation

Wash plant-01

2/28/03

Reviewed by: \_\_\_\_\_

Date: \_\_\_\_\_

**Objective:** To provide operating personnel with step by step instruction on Wash plant "B" operator normal operation.

**Requirements:** A and B Wash plant operators must have a basic working knowledge of the Wash plant operation.

**Required Documents:**

**Tools and Equipment:** Radio for communication.

PPE	Hazards	Environmental Considerations
<ul style="list-style-type: none"><li>• Hardhat</li><li>• Safety glasses</li><li>• Hearing protection</li><li>• Safety toed footwear</li><li>• Work gloves</li></ul>	<ul style="list-style-type: none"><li>• Pressured pumps</li><li>• Pressured water lines</li><li>• Rotating equipment</li><li>• Moving conveyors</li></ul>	

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## Wash plant "B" operator normal operation

### TASKS:

1. Normal operation

### NOTE

**WASH PLANT "B" OPERATOR IS RESPONSIBLE FOR BELT FILTER OPERATION AND REGULATES WASH PLANT FEED AND DISTRIBUTES PRODUCT TO BALL MILL FEED BIN AND STOCKPILE. OPERATOR TO HAVE RADIO AT ALL TIMES.**

Steps		Key Points	PPE/Hazards
1.	Monitors #7 Belt operation.		
2.	Communicates with Reclaim operators on feeder rates.		
3.	Maintains raw ore bin level for maximum rates.		
4.	Cleans #7 chute and Raw ore bin periodically.	When needed.	
5.	Restarts #7 Belt after metal is removed.	Refer to metal detector SOP	
6.	Restarts #7 Belt after Automatic sampler faults.	Refer to Auto Sampler SOP	
7.	Responsible for operation of Wash plant product belts.	Ball mill feed and stock pile product	
8.	Records #11 Belt scale reading every time #12 belt is reversed.	#12 feeds Ball mill bin and stockpile.	
9.	Records #7 and #11 belt scale totals.	2:00 p.m.-10:00 p.m.-6:00 a.m.	
10.	Responsible for Extractor operation.	Refer to Extractor SOP	
11.	Monitors 3 <sup>rd</sup> stage cyclone operation to extractors or recycle to trough.	Grade and moisture control	
12.	Takes hourly samples on Wash plant product.	Samples to lab 1:00 a.m. and 1:00 p.m.	
13.	Takes hourly samples on Wash plant on feed if Automatic sampler is down.		
14.	Records operating conditions in logbook and communicates to relief operator at shift change.		
15.	Performs clean up on filter and belt areas.		



*Conda Phosphate Operations*

## **OPERATIONS PROCEDURE ACKNOWLEDGEMENT**

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**TRAINEE:** \_\_\_\_\_

**DATE:** \_\_\_\_\_







*Conda Phosphate Operations*  
**Standard Operating Procedures**

**Wash plant**

**Recharging The Rod Mill**

**Wash plant-02**  
**3/03/04**

Reviewed by: \_\_\_\_\_

Date: \_\_\_\_\_

**Objective:** Provide operating personnel with step-by-step instruction on how to recharge the Rod mill.

**Requirements:** A and B Wash plant operators must have a basic working knowledge of the Wash plant process.

**Required Documents:** Rod mill Inch drive SOP

**Tools and Equipment:** Rod Charger, Rod mill hoist, chokers, pry bars.

PPE	Hazards	Environmental Considerations
<ul style="list-style-type: none"><li>• Hardhat</li><li>• Safety glasses</li><li>• Hearing protection</li><li>• Safety toed footwear</li><li>• Work gloves</li></ul>	<ul style="list-style-type: none"><li>• 500 lb. Rods</li><li>• Pinch points</li><li>• Hoisting loads.</li><li>• Rolling rods into mill</li></ul>	

## Recharging the Rod mill

### TASKS:

1. Setting up charger
2. Unbundling rods
3. Hoisting loads
4. Rolling rods into mill

Steps		Key Points	PPE/Hazards
1.	Lock, Tag, and Try Rod mill	Lower MCC	

### NOTE

**MOBILE WILL SET THE CHARGER UNDER THE ROD MILL HOIST.**

2.	Use Rod mill hoist to position charger into Rod mill trommel screen.		
3.	Secure planks to east side platform.		
4.	Choke rods in the center with two 3/8" by 54" chokers.	Don't lift more than five rods at a time.	
5.	Unbundle rods.		

### DANGER

**HOIST NO MORE THAN 5 RODS AT A TIME. ONLY 5 RODS AT A TIME ON THE CHARGER.**

6.	Install a Tag line.		
7.	Lay rods out flat on charger with a pry bar.		
8.	Lower isolation handle and roll one rod onto charger rollers.		
9.	Raise isolation handle back up.	Keeps other rods isolated.	
10.	Roll rods into Rod mill.		
11.	Use Rod mill inch drive to roll rods in if they don't go all the way in.	See inch drive SOP	
12.	Remove charger from mill and position in crane way.		

Training Notes:

1.



*Conda Phosphate Operations*

**OPERATIONS PROCEDURE  
ACKNOWLEDGEMENT**

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DATE: \_\_\_\_\_





*Conda Phosphate Operations*  
**Standard Operating Procedures**

**Wash plant**

**Using Rod Mill Inch Drive**

**Wash plant-01**  
**2/28/03**

Reviewed by: \_\_\_\_\_

Date: \_\_\_\_\_

**Objective:** To provide operations personnel with step-by-step instruction on how to use Rod mill Inch drive.

**Requirements:** A and B Wash plant operators must have a basic working knowledge of the Wash plant process.

**Required Documents:** N/A

**Tools and Equipment:**

PPE	Hazards	Environmental Considerations
<ul style="list-style-type: none"><li>• Hardhat</li><li>• Safety glasses</li><li>• Hearing protection</li><li>• Safety toed footwear</li><li>• Work gloves</li></ul>	<ul style="list-style-type: none"><li>• Rotating equipment.</li><li>• Stored energy.</li><li>• Pinch points</li></ul>	

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Using Rod mill Inch drive.

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**TASKS:**

1. Lock, Tag, and Try
2. Install inch drive chain
3. Rotate mill with inch drive.
4. Released stored energy

**NOTE**

**INCH DRIVE IS USED WHEN MAINTENANCE DOES REPAIR WORK, SUCH AS LIFTER AND LINER REPAIR OR REPLACEMENT. OPERATIONS MAY USE IT WHEN CHARGING THE ROD MILL.**

Steps		Key Points	PPE/Hazards
1.	Lock, Tag, and Try Rod mill.		
2.	Lock, Tag, and Try Inch drive.		
3.	Install chain to Inch drive and gearbox		Pinch points.
4.	Unlock Inch drive.		
5.	Start Inch drive.		
6.	Rotate as needed.		
7.	Stop Inch drive.		

**DANGER**

**BRAKE ON THE ROD MILL INCHER DRIVE NEEDS TO BE RELEASED. ENERGY IS STORED WHEN ROTATED. IF THE CHAIN WAS TO BREAK OR INCH DRIVE HAD A FAILURE, THE MILL WOULD ROLL BACK TO A NEUTRAL POSITION. THE BRAKE CAN BE RELEASED SLOWLY AS A CLUTCH SYSTEM DISPERSES STORED ENERGY.**

8.	Slowly release Inch drive brake until Rod mill comes to a complete stop.		Stored energy.
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Using Rod mill Inch drive.

**Training Notes:**

- 1.
- 2.
- 3.



*Conda Phosphate Operations*

**OPERATIONS PROCEDURE  
ACKNOWLEDGEMENT**

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**TRAINEE:** \_\_\_\_\_

**DATE:** \_\_\_\_\_







*Conda Phosphate Operations*  
**Standard Operating Procedures**

**Wash plant**

**Reclaiming Washed Ore Across #7 Belt**

**Wash plant-01**  
**2/28/03**

Reviewed by: \_\_\_\_\_

Date: \_\_\_\_\_

**Objective:** To provide operating personnel with step-by-step instruction on how to reclaim washed ore across #7 belt.

**Requirements:** A and B Wash plant operators must have a basic working knowledge of the Wash plant operation.

**Required Documents:**

**Tools and Equipment:**

PPE	Hazards	Environmental Considerations
<ul style="list-style-type: none"><li>• Hardhat</li><li>• Safety glasses</li><li>• Hearing protection</li><li>• Safety toed footwear</li><li>• Work gloves</li></ul>	<ul style="list-style-type: none"><li>• Moving equipment</li><li>• Running conveyors</li></ul>	

## Reclaiming washed ore over #7 belt

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### TASKS:

1. Starting belt conveyors
2. Starting shaker screen
3. Filling Ball mill feed bin

### NOTE

IF EAST RECLAIM WASHED SYSTEM IS DOWN AND #7 BELT AND WASH PLANT PRODUCT BELT SYSTEM IS OPERATIONAL, BALL MILL FEED CAN BE RUN ACROSS WIDE RECLAIM BELT AND 3" SHAKER SCREEN.

Steps		Key Points	PPE/Hazards
1.	Start #13, #16, #12, and #11 belts in sequence.		
2.	Start wide reclaim belt to #11 belt		
3.	Start shaker screen		
4.	Flop gate in #7 chute to shaker screen		
5.	Start #7 belt		
6.	Have Reclaim operators start the Kolman system		
7.	Take #7 belt scale reading at start and end of reclaiming washed ore.		
8.	Turn white light on when ready for feed.		
9.	Turn Red light on when full.		

### Training Notes:

- 1.
- 2.
- 3.
- 4.
- 5.



*Conda Phosphate Operations*

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**TRAINEE:** \_\_\_\_\_

**DATE:** \_\_\_\_\_





*Conda Phosphate Operations*  
**Standard Operating Procedures**

**Wash plant**

**Changing Extractors**

**Wash plant-01**  
**2/28/03**

Reviewed by: \_\_\_\_\_

Date: \_\_\_\_\_

**Objective:** To provide operations personnel with step-by-step instruction on how to perform extractor switching.

**Requirements:** Wash plant A & B/ need to have a basic working knowledge of the Wash plant process.

**Required Documents:** N/A

**Tools and Equipment:**

PPE	Hazards	Environmental Considerations
<ul style="list-style-type: none"><li>• Hardhat</li><li>• Safety glasses</li><li>• Hearing protection</li><li>• Safety toed footwear</li><li>• Work gloves</li></ul>	<ul style="list-style-type: none"><li>• Moving conveyors</li><li>• Rotating equipment</li><li>• Pressured pumps</li><li>• Pressured water lines</li></ul>	

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**AGR-CBI\_002062**

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## Changing extractors

### TASKS:

1. Opening and closing cyclone valves.
2. Opening and closing vacuum valves.
3. Starting and stopping extractors.
4. Tightening and loosening cloths.

### NOTE

**CHANGING EXTRACTORS IS DONE WHEN PROBLEMS DEVELOP WITH EXTRACTOR, FILTER CLOTH, OR CYCLONE PROBLEMS.**

### CAUTION

**IF CLOTH HAS TORN IN HALF AND IS JEOPARDY OF GOING INTO THE DISCHARGE CHUTE, AN EMERGENCY SHUTDOWN MAY BE REQUIRED TO PREVENT ADDITIONAL DOWNTIME. CYCLONES AND EXTRACTORS CAN BE SWITCHED AFTER THE PLANT IS DOWN.**

Steps		Key Points	PPE/Hazards
1.	Wet down cloth.		
2.	Spray dust or dirt off rubber pulley mats.		
3.	Tighten side cloth tighteners.		
4.	Open cloth and pan spray bar valves.		
5.	Switch product to stockpile.	Cakes may become wet when switching.	
6.	Start extractor motor		
7.	Open vacuum butterfly valve enough to keep cloth moving.		
8.	Open cyclones to extractor on Clarkson valve control box.		

### NOTE

**IF EXTRACTOR HAPPENS TO SPIN OUT WHILE OPENING VACUUM VALVE, YOU MAY NOT BE ABLE TO OPEN VACUUM VALVE ALL THE WAY. SPRAY OFF EXTRACTOR MATS UNTIL VACUUM VALVE CAN BE OPENED ALL THE WAY.**

## Changing extractors

Steps		Key Points	PPE/Hazards
9.	Slowly open vacuum valve to 100%	This is done once the cyclones are flowing onto the filter	
10.	Shut cyclones off to the extractor going out of service.		

### NOTE

ONCE SLURRY QUILTS GOING ON TO EXTRACTOR, THE VACUUM VALVE CAN BE CUT BACK SO VACUUM PRESSURE IS NOT LOST TO EXTRACTORS IN SERVICE. ONLY USE ENOUGH VACUUM TO KEEP THE CLOTH MOVING UNTIL CLOTH CLEARS COMPLETELY AND REACHES CLOTH SPRAY BAR.

11.	Shut cyclowash off if it is being used.		
-----	---	--	--

### Training Notes:

- 1.
- 2.
- 3.
- 4.
- 5.





*Conda Phosphate Operations*

## OPERATIONS TRAINING CERTIFICATION

With my signature I am acknowledging that I have read the procedure, I understand the procedure and that I will comply with the procedure.

TRAINEE: \_\_\_\_\_

DATE: \_\_\_\_\_





*Conda Phosphate Operations*  
**Standard Operating Procedures**

**Wash plant**  
**#7 Belt Operation**

**Wash plant-01**  
**2/28/03**

Reviewed by: \_\_\_\_\_

Date: \_\_\_\_\_

**Objective:** To provide operating personnel with step-by-step instruction on how to perform #7 belt operation.

**Requirements:** A and B Wash plant operators must have a basic working knowledge of the Wash plant operation.

**Required Documents:**

**Tools and Equipment:**

PPE	Hazards	Environmental Considerations
<ul style="list-style-type: none"><li>• Hardhat</li><li>• Safety glasses</li><li>• Hearing protection</li><li>• Safety toed footwear</li><li>• Work gloves</li></ul>	<ul style="list-style-type: none"><li>• Moving conveyors</li></ul>	

## #7 belt operation

### TASKS:

1. Verifying all clear
2. Starting conveyor

### NOTE

#7 belt is started before the Wash plant starts up. It is also started after the metal detector or the automatic sampler primary sweep faults tripping out the belt.

Steps		Key Points	PPE/Hazards
1.	Determine why the belt is off.	Refer to metal detector SOP and Reclaim operators Automatic sampler SOP	

### DANGER

The warning light for the automatic sampler goes out when the Reclaim operators reset the fault system. If work is done on the sampler sweep system, #7 belt and the sampler need to be locked, tagged, and tried.

2.	Verify with reclaim operators that everyone is clear of #7 belt.		
3.	Start the conveyor.		

### Training Notes:

- 1.
- 2.
- 3.
- 4.
- 5.



*Conda Phosphate Operations*

## OPERATIONS PROCEDURE ACKNOWLEDGEMENT

With my signature I am acknowledging that I have read the procedure, I understand the procedure and that I will comply with the procedure.

TRAINEE: \_\_\_\_\_

DATE: \_\_\_\_\_





*Conda Phosphate Operations*  
**Standard Operating Procedures**

**Wash plant**  
**3<sup>rd</sup> Stage Cyclone Operation**

**Wash plant-01**  
**2/28/03**

Reviewed by: \_\_\_\_\_

Date: \_\_\_\_\_

**Objective:** To provide operating personnel with step-by-step instruction on how to operate 3<sup>rd</sup> Stage cyclones.

**Requirements:** A and B Wash plant operators must have a basic working knowledge of the Wash plant operation.

**Required Documents:**

**Tools and Equipment:**

PPE	Hazards	Environmental Considerations
<ul style="list-style-type: none"><li>• Hardhat</li><li>• Safety glasses</li><li>• Hearing protection</li><li>• Safety toed footwear</li><li>• Work gloves</li></ul>	<ul style="list-style-type: none"><li>• Pressured slurry lines</li><li>• Pressured water lines</li></ul>	

### 3<sup>rd</sup> Stage cyclone operation

#### TASKS:

1. Putting air to cyclones apexes
2. Putting water to cyclones

#### NOTE

**AIR IS USED TO DRY UP CYCLONES WHEN EXTRACTOR CAKES ARE RUNNING WET.**

Steps		Key Points	PPE/Hazards
1.	Open main air valve to cyclone apex air regulator.		
2.	Slowly increase regulator pressure until cyclone underflow is slightly restricted.	When extractor cakes are wet.	
3.	Adjust as needed to dry up cakes without roping cyclone off.		

#### NOTE

**WHEN CYCLONES ARE ROPING OFF CYCLOWASH WATER CAN ADDED TO THIN SLURRY.**

4.	Open main cyclowash water valve to cyclone.	When cyclones are roping off.	
5.	Open ¾" Ball valve to cyclowash.		
6.	Adjust as needed to keep cyclone from roping.	Run cakes as dry as possible without roping.	

#### Training Notes:

- 1.
- 2.
- 3.
- 4.
- 5.





*Conda Phosphate Operations*

## **OPERATIONS PROCEDURE ACKNOWLEDGEMENT**

With my signature I am acknowledging that I have read the procedure, I understand the procedure and that I will comply with the procedure.

**TRAINEE:** \_\_\_\_\_

**DATE:** \_\_\_\_\_





*Conda Phosphate Operations*  
**Standard Operating Procedures**

**Wash plant**

**Putting Salt In The Brine Tank**

**Wash plant-01**  
**2/28/03**

Reviewed by: \_\_\_\_\_

Date: \_\_\_\_\_

**Objective:** To provide operations personnel with step-by-step instruction on how to put salt in the brine tank.

**Requirements:** A and B Wash plant operators must have a basic working knowledge of the Wash plant process.

**Required Documents:** N/A

**Tools and Equipment:** Razor knife

PPE	Hazards	Environmental Considerations
<ul style="list-style-type: none"><li>• Hardhat</li><li>• Safety glasses</li><li>• Hearing protection</li><li>• Safety toed footwear</li><li>• Work gloves</li></ul>	<ul style="list-style-type: none"><li>• Lifting 50 lb. Salt bags</li><li>• Cutting bags open</li></ul>	

Page 1 of 3

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### Putting salt in the brine tank

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#### TASKS:

1. Lifting salt bags
2. Opening salt bags
3. Dumping salt into brine tank

#### NOTE

**SALT LEVEL IS MAINTAINED NEAR ½ FULL. SALT IS BROUGHT IN ON PALLETS IN 50 LB. BAGS. BAGS ARE STORED NEAR SOFTENER BUILDING.**

Steps		Key Points	PPE/Hazards
1.	Remove brine tank cover		

#### CAUTION

**USE PROPER LIFTING TECHNIQUES WHEN HAULING SALT FROM PALLET AND WHEN DUMPING INTO BRINE TANK. USE CARE WHEN OPENING SALT BAGS WITH RAZOR KNIFE.**

2.	Haul salt bag to brine tank.		
3.	Open salt bag.		
4.	Dump into brine tank.	Until level is at least ½ full.	
5.	Put cover back on brine tank.		
6.	Put empty salt bags into dumpster.		

#### Training Notes:

- 1.
- 2.
- 3.
- 4.

5.



*Conda Phosphate Operations*

## OPERATIONS PROCEDURE ACKNOWLEDGEMENT

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TRAINEE: \_\_\_\_\_

DATE: \_\_\_\_\_



# Agrium

## Conda Phosphate Operations Standard Operating Procedures

### Wash plant

### Vacuum Pump Softener System

Wash plant-01  
2/28/03

Reviewed by: \_\_\_\_\_

Date: \_\_\_\_\_

**Objective:** To provide operations personnel with step-by-step instruction on how to operate Vacuum pump water softener system.

**Requirements:** A and B Wash plant operators must have a basic working knowledge of the Wash plant process.

#### Required Documents:

**Tools and Equipment:** Hardness test kit.

PPE	Hazards	Environmental Considerations
<ul style="list-style-type: none"><li>• Hardhat</li><li>• Safety glasses</li><li>• Hearing protection</li><li>• Safety toed footwear</li><li>• Work gloves</li></ul>	<ul style="list-style-type: none"><li>• Pressurized Water lines.</li><li>• Lifting 50 lb. Salt bags</li></ul>	

Page 1 of 3

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## Vacuum pump system water softener system

### TASKS:

1. Opening valves.
2. Adding salt to softener.
3. Testing water hardness.

### NOTE

WHEN WASH PLANT IS RUNNING, THE SOFTENERS ARE VALVED INTO SERVICE. THERE ARE 2 SEPARATE COLUMNS SO ONE IS ALWAYS AVAILABLE FOR SERVICE. SYSTEM SETTINGS ARE PROGRAMMED INTO THE CONTROL BOX. SYSTEM WILL AUTOMATICALLY SWITCH WHEN CYCLE IS COMPLETE, PUTTING THE RECHARGED COLUMN INTO SERVICE AND AUTOMATICALLY REGENERATES THE SPENT COLUMN

Steps		Key Points	PPE/Hazards
1.	Shut drain on softener supply line.		
2.	Shut drain on softener discharge line to vacuum pumps.		
3.	Open softener column supply water valve.		
4.	Verify water is flowing to vacuum pumps.		
5.	Test water for hardness.	Hardness kit.	
6.	Add Salt to brine tank if needed.	Keep ½ full.	

### Training Notes:

- 1.
- 2.
- 3.
- 4.
- 5.





*Conda Phosphate Operations*

## **OPERATIONS PROCEDURE ACKNOWLEDGEMENT**

With my signature I am acknowledging that I have read the procedure, I understand the procedure and that I will comply with the procedure.

**TRAINEE:** \_\_\_\_\_

**DATE:** \_\_\_\_\_





*Conda Phosphate Operations*  
**Standard Operating Procedures**

**Wash plant**

**North And South Hoist Operation**

**Wash plant-01**  
**2/28/03**

Reviewed by: \_\_\_\_\_

Date: \_\_\_\_\_

**Objective:** To provide operations personnel with step-by-step instruction on how to use North and South hoists.

**Requirements:** A and B Wash plant operators must have a basic working knowledge of the Wash plant process.

**Required Documents:** N/A

**Tools and Equipment:** Chokers and clevises.

PPE	Hazards	Environmental Considerations
<ul style="list-style-type: none"><li>• Hardhat</li><li>• Safety glasses</li><li>• Hearing protection</li><li>• Safety toed footwear</li><li>• Work gloves</li></ul>	<ul style="list-style-type: none"><li>• Hoisting loads</li><li>• Rigging</li><li>• Crane way isolation</li></ul>	

## North and South hoist operation

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### TASKS:

1. Raising and lowering loads
2. Rigging baskets and bins
3. Isolating crane ways

### NOTE

**WASH PLANT HAS 2-CRANE WAY HOISTS USED BY OPERATIONS. NORTH AND SOUTH CRANE WAYS ARE USED TO RAISE AND LOWER MATERIAL IN THE WASH PLANT BUILDING.**

Steps		Key Points	PPE/Hazards
1.	Install barrier chains on crane way being used.	Hoisting loads	Loads overhead

### DANGER

**CRANE WAYS MUST BE CLEAR AND BARRIER CHAINS IN PLACE WHEN RAISING AND LOWERING LOADS. DO NOT OVERLOAD BASKETS, METAL BINS, OR HOIST CAPABILITIES.**

2.	Verify hoist controls and cord have no defect.		
3.	Verify safety latch is OK.		
4.	Verify hoist cable is OK.		
5.	Keep eyes on load at all times.		

### Training Notes:

- 1.
- 2.
- 3.
- 4.
- 5.



*Conda Phosphate Operations*

## OPERATIONS PROCEDURE ACKNOWLEDGEMENT

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TRAINEE: \_\_\_\_\_

DATE: \_\_\_\_\_





*Conda Phosphate Operations*  
**Standard Operating Procedures**

**Wash plant**

**Filling Ball Mill Feed Bin**

**Wash plant-01**  
**2/28/03**

Reviewed by: \_\_\_\_\_

Date: \_\_\_\_\_

**Objective:** To provide operating personnel with step-by-step instruction on how to fill Ball mill feed bin

**Requirements:** A and B Wash plant operators must have a basic working knowledge of the Wash plant operation.

**Required Documents:**

**Tools and Equipment:**

PPE	Hazards	Environmental Considerations
<ul style="list-style-type: none"><li>• Hardhat</li><li>• Safety glasses</li><li>• Hearing protection</li><li>• Safety toed footwear</li><li>• Work gloves</li></ul>	<ul style="list-style-type: none"><li>• Moving conveyors</li></ul>	

## Filling Ball mill feed bin

### TASKS:

1. Reversing #12 belt
2. Taking #11 belt scale readings.

Steps		Key Points	PPE/Hazards
1.	Push button to reverse #12 belt to #13 belt.		
2.	Verify belt has switched directions.		

### NOTE

**IF BIN IS OVER FILLED, #13 BELT WILL SPIN OUT AND SHUT THE PLANT DOWN.**

3.	Fill bin till feed is near #13 belt head pulley.		
----	--	--	--

### NOTE

**VERIFY THAT RECLAIM DOZER PUSHING WASHED ORE IS NOT IN THE CONE AREA WHEN SWITCHING PRODUCT OUTSIDE.**

4.	Push button to reverse #12 belt to #16 belt to stockpile.		
----	---	--	--

### Training Notes:

- 1.
- 2.
- 3.
- 4.
- 5.





*Conda Phosphate Operations*

## OPERATIONS PROCEDURE ACKNOWLEDGEMENT

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TRAINEE: \_\_\_\_\_

DATE: \_\_\_\_\_





*Conda Phosphate Operations*  
**Standard Operating Procedures**

**Wash plant**

**Filling And Emptying Raw Ore Feed Bin**

**Wash plant-01**  
**2/28/03**

Reviewed by: \_\_\_\_\_

Date: \_\_\_\_\_

**Objective:** To provide operating personnel with step-by-step instruction on how to fill and empty Raw ore feed bin.

**Requirements:** A and B Wash plant operators must have a basic working knowledge of the Wash plant operation.

**Required Documents:**

**Tools and Equipment:** Air lances and air hoses.

PPE	Hazards	Environmental Considerations
<ul style="list-style-type: none"><li>• Hardhat</li><li>• Safety glasses</li><li>• Hearing protection</li><li>• Safety toed footwear</li><li>• Work gloves</li></ul>	<ul style="list-style-type: none"><li>• Moving conveyors</li><li>• Pressured air lines</li><li>• Air lancing chutes</li><li>• Air lancing bin</li></ul>	

## Filling and emptying Raw ore feed bin

### TASKS:

1. Monitoring raw ore bin level.
2. Cleaning #7 chute.
3. Cleaning Raw ore bin.

Steps		Key Points	PPE/Hazards
1.	Raise B-bed feeder at reclaim.	To gain level in bin.	
2.	Verify raw ore bin level.	Visually	

### NOTE

**IF BIN IS OVER FILLED IT WILL GO UP #7 CHUTE.**

3.	Give Reclaim operators a Red light when feed is at the breaker bar level.	Where ore hits after going down #7 chute.	
4.	Slow Raw ore feeder down when bin is ½ empty.	Could over load recycle system with rock.	
5.	Verify clips are in hose quick couplers.	Pressured air hoses.	
6.	Clean #7 chute and raw ore bin with an air lance.		
7.	Give White light when bin is almost empty.	Lag time for feed to get from grizzly to the raw ore bin.	

### Training Notes:

- 1.
- 2.
- 3.
- 4.
- 5.



*Conda Phosphate Operations*

## OPERATIONS PROCEDURE ACKNOWLEDGEMENT

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TRAINEE: \_\_\_\_\_

DATE: \_\_\_\_\_





*Conda Phosphate Operations*  
**Standard Operating Procedures**

**Wash plant**  
**Metal Detector Operation**

**Wash plant-01**  
**2/28/03**

Reviewed by: \_\_\_\_\_

Date: \_\_\_\_\_

**Objective:** To provide operating personnel with step by step instruction on how to perform #7 belt metal detector procedure.

**Requirements:** A and B Wash plant operators must have a basic working knowledge of the Wash plant operation.

**Required Documents:**

**Tools and Equipment:** Lock, Tag, and a rake

PPE	Hazards	Environmental Considerations
<ul style="list-style-type: none"><li>• Hardhat</li><li>• Safety glasses</li><li>• Hearing protection</li><li>• Safety toed footwear</li><li>• Work gloves</li></ul>	<ul style="list-style-type: none"><li>• Moving conveyors</li><li>• Possible heavy metal</li><li>• Possible sharp edges</li></ul>	

## #7 Belt metal detector

### TASKS:

1. Lock, Tag, Try
2. Removing metal from belt
3. Putting metal in metal bin

Steps		Key Points	PPE/Hazards
1.	Silence alarm	Metal was detected	
2.	Put lock and tag on start button isolation device.	It is the only start/stop station.	
3.	Find and remove metal from belt.		
4.	Remove lock, and tag		
5.	Hold start button in until belt reaches full speed.	Belt has a soft start installed	
6.	Put metal in metal bin.		

### Training Notes:

- 1.
- 2.
- 3.
- 4.
- 5.





*Conda Phosphate Operations*

## **OPERATIONS PROCEDURE ACKNOWLEDGEMENT**

With my signature I am acknowledging that I have read the procedure, I understand the procedure and that I will comply with the procedure.

**TRAINEE:** \_\_\_\_\_

**DATE:** \_\_\_\_\_





*Conda Phosphate Operations*  
**Standard Operating Procedures**

**Wash plant**

**Extractor Operation**

**Wash plant-01**  
**2/28/03**

Reviewed by: \_\_\_\_\_

Date: \_\_\_\_\_

**Objective:** To provide operating personnel with step-by-step instruction on how to operate an extractor.

**Requirements:** A and B Wash plant operators must have a basic working knowledge of the Wash plant operation.

**Required Documents:**

**Tools and Equipment:** Water hoses.

PPE	Hazards	Environmental Considerations
<ul style="list-style-type: none"><li>• Hardhat</li><li>• Safety glasses</li><li>• Hearing protection</li><li>• Safety toed footwear</li><li>• Work gloves</li></ul>	<ul style="list-style-type: none"><li>• Moving conveyors</li><li>• Pressured vacuum lines</li><li>• Pressured water lines</li><li>• Pressured slurry lines</li></ul>	

## Extractor operation

### TASKS:

1. Observing extractor in service.
2. Optimizing cloth life.
3. Noting defects in cloth and extractor.

Steps		Key Points	PPE/Hazards
1.	Verify side tighteners are snug.	Adjust as needed	
2.	Verify sprays are working properly	Visually	
3.	Verify cloth zipper is straight.	Tighten the side with the leading edge or loosen the side with the trailing edge to straighten zipper.	
4.	Use spring loaded cloth tighteners to take wrinkles out of cloth.	When needed.	
5.	Use spring loaded cloth tighteners to keep cloth from wandering to the east or west.	When needed.	
6.	Keep pans washed out so material doesn't wear on the cloth.	When needed.	
7.	Write work orders on extractor defects.		

### Training Notes:

- 1.
- 2.
- 3.
- 4.
- 5.



*Conda Phosphate Operations*

## OPERATIONS PROCEDURE ACKNOWLEDGEMENT

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TRAINEE: \_\_\_\_\_

DATE: \_\_\_\_\_





*Conda Phosphate Operations*  
**Standard Operating Procedures**

**Wash plant**

**Rod Mill Oversize Magnet**

**Wash plant-01**  
**2/28/03**

Reviewed by: \_\_\_\_\_

Date: \_\_\_\_\_

**Objective:** To provide operating personnel with step-by-step instruction on how to perform Rod mill magnet metal removal.

**Requirements:** A and B Wash plant operators must have a basic working knowledge of the Wash plant operation.

**Required Documents:**

**Tools and Equipment:** Sample bucket lid

PPE	Hazards	Environmental Considerations
<ul style="list-style-type: none"><li>• Hardhat</li><li>• Safety glasses</li><li>• Hearing protection</li><li>• Safety toed footwear</li><li>• Work gloves</li></ul>	<ul style="list-style-type: none"><li>• Moving conveyors</li><li>• Energized magnet</li><li>• Possible sharp edges on metal</li></ul>	

## Rod mill recycle magnet

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### TASKS:

1. Lock, Tag, Try
2. Removing metal from magnet

Steps		Key Points	PPE/Hazards
1.	Shut Rod mill recycle conveyor off.		
2.	Lock, Tag, Try recycle belt.	Lower MCC	
3.	Position sample bucket lid under metal on magnet.		
4.	Shut power off to magnet.		
5.	Remove sample lid with the metal from the magnet.	Put in metal in bucket	
6.	Turn power back onto magnet		
7.	Remove lock and tag from breaker.		
8.	Start recycle belt		
9.	Put metal in metal bin.		

### Training Notes:

- 1.
- 2.
- 3.
- 4.
- 5.





*Conda Phosphate Operations*

## **OPERATIONS PROCEDURE ACKNOWLEDGEMENT**

With my signature I am acknowledging that I have read the procedure, I understand the procedure and that I will comply with the procedure.

**TRAINEE:** \_\_\_\_\_

**DATE:** \_\_\_\_\_



Start-ups





*Conda Phosphate Operations*  
**Standard Operating Procedures**

**Wash plant**

**Starting Vacuum Pumps**

**Wash plant-02**  
**3/03/04**

Reviewed by: \_\_\_\_\_

Date: \_\_\_\_\_

**Objective:** To provide operations personnel with step-by-step instruction on how to start vacuum pumps.

**Requirements:** A and B Wash plant operators must have a basic working knowledge of the Wash plant process.

**Required Documents:** N/A

**Tools and Equipment:** Pipe wrench

PPE	Hazards	Environmental Considerations
<ul style="list-style-type: none"><li>• Hardhat</li><li>• Safety glasses</li><li>• Hearing protection</li><li>• Safety toed footwear</li><li>• Work gloves</li></ul>	<ul style="list-style-type: none"><li>• Suction lines under vacuum pressure.</li></ul>	

Page 1 of 4

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## Starting vacuum pumps

### TASKS:

1. Opening valves.
2. Starting vacuum pumps.

### NOTE

VACUUM PUMPS ARE USED TO REMOVE AS MUCH WATER AS POSSIBLE FROM EXTRACTOR FILTER CAKES. 3 OF 4 PUMPS ARE NEEDED FOR OPERATION AND 4 ARE USED WHENEVER POSSIBLE.

Steps		Key Points	PPE/Hazards
1.	Turn cooling water on from softeners.	The red Ingersol Rand vacuum pumps #1 and #4 are the only pumps that require cooling water. The white Gardner Denvers #2 and #3 do not require cooling water.	
2.	Verify extractor vacuum valves are open.		
3.	Verify oil levels in vacuum pumps are OK.		

### CAUTION

POP OFF VALVES ARE INSTALLED SO THAT OVER PRESSURING SHOULD NOT OCCUR. POP OFF PRESSURE IS 15 PSI OF VACUUM PRESSURE. ALL VACUUM PUMPS ARE LINKED INTO ONE COMMON HEADER. EACH VACUUM PUMP HAS A MANUAL BUTTERFLY INLET VALVE. INLET VALVE MUST BE SHUT IF PUMP IS TURNING BACKWARD BECAUSE OF VACUUM PRESSURE GENERATED FROM OTHER PUMPS. GARDNER DENVER UNITS HAVE AN ADDITIONAL 2" MANUAL BUTTERFLY THAT NEEDS TO BE OPENED TO RELIEVE INLET SUCTION PRESSURE WHEN MAIN BUTTERFLY IS SHUT.

4.	Open inlet valve ¼ open.		
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## Starting vacuum pumps

### NOTE

**#1 AND #4 INGERSOLL-RAND COMPRESSORS HAVE OIL PRESSURE SWITCHES THAT ARE NOT SATISFIED UNTIL 10 LBS OF OIL PRESSURE IS GENERATED WHILE HOLDING START BUTTON IN. #2 AND #3 ARE GARDNER DENVER UNITS, WHICH HAVE NO OIL PRESSURE SWITCHES.**

Steps		Key Points	PPE/Hazards
5.	Start vacuum pump		
6.	Open inlet butterfly valve.		

### NOTE

**THE INGERSOLL-RAND UNITS HAVE A HIGH TEMPERATURE LIMIT SWITCH SET AT 150° AND THE GARDNER DENVER UNITS LIMIT SWITCHES ARE SET AT 290° THAT WILL SHUT THE UNITS DOWN IF HIGH TEMPERATURE IS REACHED.**

## Standard Operating Control Limits

SOCL #:

Deviation	Condition	Consequence	Action To Take
High/High			
High			
Low			
Low/Low			
Temperature	150° degrees for the Ingersol Rand. 290° for the Gardner Denver.	Will shut down	Adjust cooling water on Ingersol Rands.
Pressure	Below 10 lbs oil pressure	Will not stay running.	Hold start button in until 10 lbs pressure is reached.

### Training Notes:

- 1.
- 2.
- 3.
- 4.
- 5.



*Conda Phosphate Operations*

## **OPERATIONS PROCEDURE ACKNOWLEDGEMENT**

With my signature I am acknowledging that I have read the procedure, I understand the procedure and that I will comply with the procedure.

**TRAINEE:** \_\_\_\_\_

**DATE:** \_\_\_\_\_





# Agrium

*Conda Phosphate Operations*  
**Standard Operating Procedures**

## Wash plant

### Starting the Rod mill

Wash plant-01  
2/28/03

Reviewed by: \_\_\_\_\_

Date: \_\_\_\_\_

**Objective:** To provide operations personnel with step-by-step instruction on how to start the Rod mill.

**Requirements:** A and B Wash plant operators must have a basic working knowledge of the Wash plant process.

**Required Documents:** N/A

**Tools and Equipment:**

PPE	Hazards	Environmental Considerations
<ul style="list-style-type: none"><li>• Hardhat</li><li>• Safety glasses</li><li>• Hearing protection</li><li>• Safety toed footwear</li><li>• Work gloves</li></ul>	Rotating equipment.	Pinion grease containment.

## Starting the Rod mill

### TASKS:

1. Pumping Rod mill bearing lift pumps.
2. Starting Rod mill motor.

Steps		Key Points	PPE/Hazards
1.	Verify trunnion-bearing oil levels are OK.		
2.	Verify gearbox oil level is OK.		
3.	Pump up both north and south bearings.	10-15 full strokes	
4.	Turn on Rod mill pinion greaser switch.		
5.	Start Rod mill motor.		

### Training Notes:

- 1.
- 2.
- 3.
- 4.
- 5.



*Conda Phosphate Operations*

## **OPERATIONS PROCEDURE ACKNOWLEDGEMENT**

With my signature I am acknowledging that I have read the procedure, I understand the procedure and that I will comply with the procedure.

**TRAINEE:** \_\_\_\_\_

**DATE:** \_\_\_\_\_





*Conda Phosphate Operations*  
**Standard Operating Procedures**

**Wash plant**

**Start up after Turnaround**

**Wash plant-01**  
**2/28/03**

Reviewed by: \_\_\_\_\_

Date: \_\_\_\_\_

**Objective:** To provide operations personnel with step-by-step instruction on how to perform a start up after turnaround.

**Requirements:** Wash plant A & B/ need to have a basic working knowledge of the Wash plant process.

**Required Documents:**

**Tools and Equipment:** Pipe wrench

PPE	Hazards	Environmental Considerations
<ul style="list-style-type: none"><li>• Hardhat</li><li>• Safety glasses</li><li>• Hearing protection</li><li>• Safety toed footwear</li><li>• Work gloves</li></ul>	<ul style="list-style-type: none"><li>• Moving conveyors</li><li>• Rotating equipment</li><li>• Pressured pumps</li><li>• Pressured water lines</li></ul>	

## Start up after turnaround

### TASKS:

1. Check equipment and maintenance clean up
2. Starting belt systems
3. Starting vacuum system
4. Starting pump circuit
5. Starting grinding circuit

### NOTE

**START UP AFTER TURNAROUND IS REALLY NO DIFFERENT THAN THE NORMAL START UP. A CLOSER INSPECTION OF EQUIPMENT MAY BE NECESSARY DUE TO THE VOLUME OF WORK THAT MAY HAVE OCCURRED DURING TURNAROUND.**

Steps		Key Points	PPE/Hazards
1.	Verify fresh and reclaim water is available.	Both fresh and reclaim systems have pressure gauges.	

### DANGER

**STAND OFF TO THE SIDE OF SWITCHGEAR PANEL WHEN RACKING IN BREAKERS.**

2.	Verify that everything needed is racked in both MCC's		
----	---	--	--

### CAUTION

**PRODUCT CAN GO DIRECTLY TO THE TAILINGS SUMP IF DRAIN VALVE ON 2<sup>ND</sup> STAGE SUMP IS NOT COMPLETELY SHUT. THIS WASTES PRODUCT AND COULD PLUG THE TAILINGS LINE.**

3.	Close 1 <sup>st</sup> , 2 <sup>nd</sup> , 3 <sup>rd</sup> stage sump drains.		
4.	Close rod mill sump and oversize rock sump drains		
5.	Verify all inlet and discharge valves are open for pumps to be in service.		

Start up after turnaround

**NOTE**  
**ROD MILL PRODUCT PUMPS AND 2<sup>ND</sup> STAGE EAST AND 3<sup>RD</sup> STAGE WEST HAVE DRAIN PLUGS.**

Steps		Key Points	PPE/Hazards
6.	Verify all drain valves are shut and plugs are in pumps to be in service		
7.	Verify gland water pump is running and gland water is flowing for pumps in service.		
8.	Verify that north or south tailings pump is in service.		

**NOTE**  
**1<sup>ST</sup> STAGE HAS 16 CYCLONES, 2<sup>ND</sup> STAGE HAS 11 CYCLONES, AND 3<sup>RD</sup> STAGE HAS 10 CYCLONES AVAILABLE FOR USE. GRADE CONTROL WILL DICTATE HOW MANY ON EACH STAGE WILL BE IN SERVICE.**

9.	Verify that all cyclone inlet valves are open for cyclones to be in service.	There are 3 stages of cyclone headers.	
----	--	--	--

**CAUTION**  
**#7 CHUTE HAS 2 GATES THAT CAN BE POSITIONED TO DIVERT MATERIAL 3 DIFFERENT WAYS. WHEN WASH PLANT IS IN OPERATION IT IS SET TO FEED THE RAW ORE BIN.**

10.	Verify #7 belt chute gates are set for the raw ore bin.		
11.	Start #7 Belt and have reclaim operators start up their system.		
12.	Start extractor booster pump.		
13.	Start #13, #16, #12, and #11 belts in sequence. Turn on pan wash water.	Belts are interlocked.	
14.	Open water softener inlet and discharge valves to vacuum pumps.	Test water for hardness each shift.	
15.	Verify flow to each vacuum pump in service.		



**Start up after turnaround**

<b>Steps</b>		<b>Key Points</b>	<b>PPE/Hazards</b>
16.	Verify that vacuum valves are open on extractors to be in service.	Vacuum valve to extractor not in use must be shut.	
17.	Start #3, #2, #1, and #4 vacuum pumps in sequence.	Four are used when running 2 extractors.	
18.	Tighten side cloth tighteners, wet down cloth, open front and rear spray bar water valves	Side tighteners may need to be tightened after running for a while.	
19.	Verify that cyclone valves are open to extractors to be in service.	Valves to extractor not in use must be shut.	
20.	Start extractors to be in service.		

**NOTE**

**IF BALL MILL WATER IS IN MANUAL OR CASCADE, PRESSURE FLUCTUATIONS MAY INCREASE OR DECREASE WATER FLOW TO MILLS.**

21.	Verify that 3 <sup>rd</sup> stage level controller is set at 40" and open 3 <sup>rd</sup> stage make up water valve.	Open valve slowly.	
22.	Start extractor booster pump and open scrubber chute spray water valves.	There are 2 scrubber chute valves.	
23.	Start scrubber lube pump.		
24.	Verify that water is going to both east and west bearing.	40 psi needed to satisfy interlock.	
25.	Verify Ball mill water is OK.		
26.	Shut tailings make up water reclaim valve.		
27.	Open Scrubber crows nest valve.		
28.	Open scrubber spray bar valve and adjust ¼ plus water.		
29.	Open Rod mill water valve.		
30.	Open valve from Ball mill floor sump to rock sump and close valve to tailings sump.	Verify that the valves have switched.	

### Start up after turnaround

	Steps	Key Points	PPE/Hazards
31.	Partially open rock sump butterfly valve to rock sump.	Valve will need to be adjusted.	
32.	Start rock sump pump.		
33.	Start rod mill product pump in service		
34.	Open rod mill spray bar water valve northwest of rod mill trommel.		
35.	Switch floor sump water to rod mill.		
36.	Pump up rod mill bearings with hand lift pump.	20 strokes.	
37.	Start rod mill pinion greaser.		
38.	Start 1 <sup>st</sup> , 2 <sup>nd</sup> , and 3rd, stage pumps in sequence.		
39.	Start reclaim booster pump from control room panel.		
40.	Start Impactor.		
41.	Start Scrubber motor and engage clutch.		
42.	Give reclaim a white light for Wash plant feed.		
43.	Start rod mill.	When feed hit the B-Bed Bin.	
44.	Start raw ore bin feeder when feed hits the bin.		
45.	Start tailings sampler and put an empty bottle on.		
46.	Adjust water where needed to maintain first stage sump level.	70 " is a good target.	
47.	Start feed and product samples when full cakes are on extractor.	3" to 4" is a normal cake depth.	
48.	Adjust reclaim and raw ore feeders to run maximum rates.		

**NOTE**  
**NORMAL LIMITATIONS ON RATE ARE EXCESS RECYCLE ROCK**  
**FROM ROD MILL OR 3<sup>RD</sup> STAGE CYCLONE ROPING.**

### Training Notes:

1.

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*Conda Phosphate Operations*

## OPERATIONS PROCEDURE ACKNOWLEDGEMENT

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TRAINEE: \_\_\_\_\_

DATE: \_\_\_\_\_





*Conda Phosphate Operations*  
**Standard Operating Procedures**

**Wash plant**

**Starting Upright Compressors**

**Wash plant-01**  
**2/28/03**

Reviewed by: \_\_\_\_\_

Date: \_\_\_\_\_

**Objective:** To provide operations personnel with step-by-step instruction on how to start the Upright compressors

**Requirements:** A and B Wash plant operators must have a basic working knowledge of the Wash plant process.

**Required Documents:** N/A

**Tools and Equipment:** Pipe wrench

PPE	Hazards	Environmental Considerations
<ul style="list-style-type: none"><li>• Hardhat</li><li>• Safety glasses</li><li>• Hearing protection</li><li>• Safety toed footwear</li><li>• Work gloves</li></ul>	<ul style="list-style-type: none"><li>• Pressurized Water lines.</li><li>• Pressurized air lines</li></ul>	

Page 1 of 4

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## Starting Upright compressors

### TASKS:

1. Verifying oil levels
2. Verifying cooling water is available
3. Opening valves
4. Starting compressor

#### NOTE

WASH PLANT COMPRESSOR ROOM IS LOCATED ON WEST END OF WASH PLANT BUILDING. #1, #2, AND #3 COMPRESSORS ARE AVAILABLE FOR SERVICE. 2 OF 3 COMPRESSORS ARE NORMALLY USED. ALL THREE CAN BE PUT IN SERVICE IF AIR USAGE EXCEEDS THE DEMAND FOR 2. THIS USUALLY DETERMINED BY DISCHARGE AIR TEMPERATURES.

Steps		Key Points	PPE/Hazards
1.	Verify oil levels are OK.		

#### NOTE

NORMAL OPERATING TEMPERATURES USUALLY RUN BETWEEN 250\*-300\*. COOLING WATER IS NEEDED TO RUN THE COMPRESSORS. IT IS SHUT OFF ON A COMPRESSOR THAT IS DOWN

2.	Open cooling water valve.		
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#### CAUTION

A LACK OF COOLING WATER WILL CAUSE COMPRESSOR TO SHUT DOWN BECAUSE OF HIGH TEMPERATURE. COMPRESSORS WILL TRIP OUT ON A HIGH LIMIT SWITCH OF 350\*.

#### NOTE

UPRIGHT COMPRESSORS HAVE POP OFF VALVES ON THE DISCHARGE LINE TO RELIEVE PRESSURE SHOULD A COMPRESSOR BE STARTED WITH THE DISCHARGE VALVE SHUT.

## Starting Upright compressors

	Steps	Key Points	PPE/Hazards
3.	Open discharge valve.		

<b>NOTE</b> <b>COMPRESSORS IN SERVICE, LOAD WHEN RECEIVER TANK PRESSURE DROPS TO 74 PSI AND UNLOAD WHEN RECEIVER TANK PRESSURE REACHES 84 PSI. UNLOADER VALVES MUST BE SET CORRECTLY OR COMPRESSORS WILL NOT LOAD AND UNLOAD PROPERLY.</b>			
---	--	--	--

4.	Open unloader valve.		
5.	Start Compressor.		

Standard Operating Control Limits			
SOCL #:			
Deviation	Condition	Consequence	Action To Take
High/High	350 degrees	Compressor shuts down.	Restore water supply or bring another compressor online.
High			
Low			
Low/Low			
Temperature			
Pressure			

### Training Notes:

- 1.
- 2.
- 3.
- 4.
- 5.



*Conda Phosphate Operations*

## OPERATIONS PROCEDURE ACKNOWLEDGEMENT

With my signature I am acknowledging that I have read the procedure, I understand the procedure and that I will comply with the procedure.

TRAINEE: \_\_\_\_\_

DATE: \_\_\_\_\_







*Conda Phosphate Operations*  
**Standard Operating Procedures**

**Wash plant**

**Starting Ore Scrubber**

**Wash plant-01**  
**2/28/03**

Reviewed by: \_\_\_\_\_

Date: \_\_\_\_\_

**Objective:** To provide operations personnel with step-by-step instruction on how to perform start/jog of the Ore Scrubber.

**Requirements:** A and B Wash plant operators must have a basic working knowledge of the Wash plant process.

**Required Documents:** N/A

**Tools and Equipment:**

PPE	Hazards	Environmental Considerations
<ul style="list-style-type: none"><li>• Hardhat</li><li>• Safety glasses</li><li>• Hearing protection</li><li>• Safety toed footwear</li><li>• Work gloves</li></ul>	<ul style="list-style-type: none"><li>• Pressurized Water lines</li><li>• Rotating equipment.</li></ul>	Pinion grease containment.

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## Starting Ore Scrubber

### TASKS:

1. Starting bearing lube pump.
2. Starting motor.
3. Engaging clutch.

### NOTE

SCRUBBER LUBE PUMP SUPPLIES EAST AND WEST TRUNNION BEARINGS WITH FRESH COOLING WATER. A LOW-PRESSURE LIMIT SWITCH IS IN PLACE TO SHUT SCRUBBER DOWN IF LINE PRESSURE DROPS BELOW 45 PSI. BEARING FLOW CONTROL VALVES ARE ON THE DISCHARGE SIDE OF PUMP. THEY ARE LOCATED WEST OF LUBE TANK. NORTH VALVE GOES TO WEST BEARING; SOUTH VALVE GOES TO EAST BEARING. THEY ARE THROTTLED SO 45 POUNDS OF LINE PRESSURES EXISTS. A MANUAL GATE VALVE CAN SUPPLY EAST BEARING WITH FRESH WATER THROUGH BEARING CAP COVER. THIS IS SEPARATE FROM LUBE PUMP SYSTEM.

Steps		Key Points	PPE/Hazards
1.	Start Lube pump.	Need 40 psi to satisfy pressure switch.	
2.	Open valve to east bearing.		

### CAUTION

AIR ACTIVATED CLUTCH IS ENGAGED AFTER SCRUBBER MOTOR IS STARTED. 80 PSI IS NORMAL AIR PRESSURE IN THE WASH PLANT. IF AIR PRESSURE DROPS SCRUBBER WILL NOT START. AIR PRESSURE LIMIT SWITCH WILL HOLD IT OUT. IF RUNNING AND AIR PRESSURE DROPS, SCRUBBER MAY STOP TURNING AND CLUTCH SHOES WILL DRAG ON SHAFT CAUSING FRICTION AND POSSIBLE CLUTCH SHOE FIRE.

3.	Verify air pressure.		
----	----------------------	--	--

### NOTE

ORE SCRUBBER CAN BE JOGGED. JOG SWITCHES ON ORE SCRUBBER BREAKER AND IMPACTOR BREAKER NEED TO BE IN THE JOG POSITION. IT CAN THEN BE JOGGED TO ROTATE TROMMEL SCREEN WHERE IT NEEDS TO BE WHEN IT IS CHANGED OUT. PINION GREASER STARTS WHEN CLUTCH IS ENGAGED.

### Starting Ore Scrubber

Steps		Key Points	PPE/Hazards
4.	Start motor.		
5.	Engage clutch.		

Standard Operating Control Limits			
SOCL #:			
Deviation	Condition	Consequence	Action To Take
High/High			
High			
Low			
Low/Low	<40 lbs. Water pressure	Clutch will not engage.	Restore needed pressure
Temperature			
Pressure	Loss of air pressure	Clutch dragging on motor shaft	Shut motor off.

### Training Notes:

- 1.
- 2.
- 3.
- 4.
- 5.



*Conda Phosphate Operations*

## **OPERATIONS PROCEDURE ACKNOWLEDGEMENT**

With my signature I am acknowledging that I have read the procedure, I understand the procedure and that I will comply with the procedure.

**TRAINEE:** \_\_\_\_\_

**DATE:** \_\_\_\_\_





*Conda Phosphate Operations*

## Standard Operating Procedures

### Wash plant

#### Normal start up

Wash plant-01

2/28/03

Reviewed by: \_\_\_\_\_

Date: \_\_\_\_\_

**Objective:** To provide operations personnel with step-by-step instruction on how to perform a start up of the Wash plant.

**Requirements:** Wash plant A & B/ need to have a basic working knowledge of the Wash plant process.

#### Required Documents:

**Tools and Equipment:** Pipe wrench

PPE	Hazards	Environmental Considerations
<ul style="list-style-type: none"><li>• Hardhat</li><li>• Safety glasses</li><li>• Hearing protection</li><li>• Safety toed footwear</li><li>• Work gloves</li></ul>	<ul style="list-style-type: none"><li>• Moving conveyors</li><li>• Rotating equipment</li><li>• Pressured pumps</li><li>• Pressured water lines.</li><li>• Natural Gas.</li></ul>	

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## Normal start up

### TASKS:

1. Starting belt systems
2. Starting vacuum system
3. Starting pump circuit
4. Starting grinding circuit

Steps		Key Points	PPE/Hazards
1.	Verify fresh and reclaim water is available.	Both fresh and reclaim systems have pressure gauges.	

**DANGER**  
**STAND OFF TO THE SIDE OF SWITCHGEAR PANEL WHEN RACKING IN BREAKERS.**

2.	Verify that everything needed is racked in both MCC's		
----	---	--	--

**CAUTION**  
**PRODUCT CAN GO DIRECTLY TO THE TAILINGS SUMP IF DRAIN VALVE ON 2<sup>ND</sup> STAGE SUMP IS NOT COMPLETELY SHUT. THIS WASTES PRODUCT AND COULD PLUG THE TAILINGS LINE.**

3.	Close 1 <sup>st</sup> , 2 <sup>nd</sup> , 3 <sup>rd</sup> stage sump drains.		
4.	Close rod mill sump and oversize rock sump drains		
5.	Verify all inlet and discharge valves are open for pumps to be in service.		

**NOTE**  
**ROD MILL PRODUCT PUMPS AND 2<sup>ND</sup> STAGE EAST AND 3<sup>RD</sup> STAGE WEST HAVE DRAIN PLUGS.**

6.	Verify all drain valves are shut and plugs are in pumps to be in service.		
7.	Verify gland water pump is running and gland water is flowing for pumps in service.		



### Normal start up

Steps		Key Points	PPE/Hazards
8.	Verify that north or south tailings pump is in service.		

**NOTE**

**1<sup>ST</sup> STAGE HAS 16 CYCLONES, 2<sup>ND</sup> STAGE HAS 11 CYCLONES, AND 3<sup>RD</sup> STAGE HAS 10 CYCLONES AVAILABLE FOR USE. GRADE CONTROL WILL DICTATE HOW MANY ON EACH STAGE WILL BE IN SERVICE.**

9.	Verify that all cyclone inlet valves are open for cyclones to be in service.	There are 3 stages of cyclone headers.	
----	--	--	--

**CAUTION**

**#7 CHUTE HAS 2 GATES THAT CAN BE POSITIONED TO DIVERT MATERIAL 3 DIFFERENT WAYS. WHEN WASH PLANT IS IN OPERATION IT IS SET TO FEED THE RAW ORE BIN.**

10.	Verify #7 belt chute gates are set for the raw ore bin.	B- operator does this	
11.	Start #7 Belt and have reclaim operators start up their system.	B- operator does this	
12.	Start extractor booster pump.		
13.	Start #13, #16, #12, and #11 belts in sequence. Turn on pan wash water.	Belts are interlocked. B- operator does this	
14.	Open water softener inlet and discharge valves to vacuum pumps.	Test water for hardness each shift.	
15.	Verify flow to each vacuum pump in service.	Refer to SOP	
16.	Verify that vacuum valves are open on extractors to be in service.	Vacuum valve to extractor not in use must be shut. B- operator does this	
17.	Start #3, #2, #1, and #4 vacuum pumps in sequence.	Four are used when running 2 extractors.	

### Normal start up

Steps		Key Points	PPE/Hazards
18.	Tighten side cloth tighteners, wet down cloth, open front and rear spray bar water valves	Side tighteners may need to be tightened after running for a while. B- operator does this	
19.	Verify that cyclone valves are open to extractors to be in service.	Valves to extractor not in use must be shut. B- operator does this	
20.	Start extractors to be in service.	B- operator does this	
21.	Verify that 3 <sup>rd</sup> stage level controller is set at 40" and open 3 <sup>rd</sup> stage make up water valve.	Open valve slowly.	
22.	Open scrubber chute spray water valves.	There are 2 scrubber chute valves.	
23.	Start scrubber lube pump.		
24.	Verify water is going to both the east and west bearings.	40 psi needed to satisfy interlock.	

<p style="text-align: center;"><b>NOTE</b></p> <p style="text-align: center;"><b>IF BALL MILL WATER IS IN MANUAL OR CASCADE, PRESSURE FLUCTUATIONS MAY INCREASE OR DECREASE WATER FLOW TO MILLS.</b></p>
--

25.	Verify Ball mill water is in automatic.		
26.	Shut tailings make up water reclaim valve.		
27.	Close drain valve on scrubber inlet line. Open Scrubber crows nest valve.		
28.	Open scrubber spray bar valve and adjust ¼ plus water.		
29.	Open Rod mill water valve.		
30.	Open valve from Ball mill floor sump to rock sump and close valve to tailings sump.		

# Normal start up

Steps		Key Points	PPE/Hazards
31.	Partially open rock sump butterfly valve to rock sump.	Valve will need to be adjusted.	
32.	Start rock sump pump.		
33.	Start rod mill product pump in service.		
34.	Open rod mill spray bar water valve northwest of rod mill trommel.		
35.	Switch floor sump water to rod mill.	Verify that valves have switched	
36.	Pump up rod mill bearings with hand lift pump.	20 strokes.	
37.	Start rod mill pinion greaser.		
38.	Start 1 <sup>st</sup> , 2 <sup>nd</sup> , and 3rd, stage pumps in sequence.		
39.	Start reclaim booster pump from control room panel.		
40.	Start Impactor.		
41.	Start Scrubber motor and engage clutch.		
42.	Give reclaim a white light for Wash plant feed.	B- operator does this	
43.	Start rod mill.	When feed hits the Raw ore bin.	
44.	Start raw ore bin feeder when feed hits the bin.		
45.	Start tailings sampler and put an empty bottle on.		
46.	Adjust water where needed to maintain first stage sump level.	70 " is a good target.	
47.	Start feed and product samples when full cakes are on extractor.	3" to 4" is a normal cake depth. B-operator does this	
48.	Adjust reclaim and raw ore feeders to run maximum rates.		

Normal start up

**NOTE**  
**NORMAL LIMITATIONS ON RATE ARE EXCESS RECYCLE ROCK**  
**FROM ROD MILL OR 3<sup>RD</sup> STAGE CYCLONE ROPING.**

**Training Notes:**

- 1.
- 2.
- 3.
- 4.
- 5.



*Conda Phosphate Operations*

## **OPERATIONS PROCEDURE ACKNOWLEDGEMENT**

With my signature I am acknowledging that I have read the procedure, I understand the procedure and that I will comply with the procedure.

**TRAINEE:** \_\_\_\_\_

**DATE:** \_\_\_\_\_



Shut Downs







*Conda Phosphate Operations*  
**Standard Operating Procedures**

**Wash plant**  
**Critical Equipment Failures**

**Wash plant-01**  
**2/28/03**

Reviewed by: \_\_\_\_\_

Date: \_\_\_\_\_

**Objective:** To provide operating personnel with step-by-step instruction on how to perform a shutdown with critical equipment failures.

**Requirements:** Wash Plant A & B Operators need to have a basic working knowledge of the Wash Plant process.

**Required Documents:**

**Tools and Equipment:** Pipe wrench

PPE	Hazards	Environmental Considerations
<ul style="list-style-type: none"><li>• Hardhat</li><li>• Safety glasses</li><li>• Hearing protection</li><li>• Safety toed footwear</li><li>• Work gloves</li></ul>	<ul style="list-style-type: none"><li>• Moving conveyors</li><li>• Rotating equipment</li><li>• Pressured pumps and water lines</li></ul>	Sulfuric water to tailings sump will need to be diverted to Phos if tailings system is down.

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## Critical equipment failures

### TASKS:

1. Equipment shutdown.
2. System clean out.
3. Equipment isolation.

### NOTE

**CRITICAL EQUIPMENT FAILURES CAN OCCUR IN THE GRINDING, PUMP, FEED, AND PRODUCT CONVEYOR SYSTEM. SOME EQUIPMENT FAILURES WILL NECESSITATE AN EMERGENCY SHUTDOWN. THE DURATION OF THE SHUT DOWN WILL VARY. A LOT OF PUMPS HAVE SPARES THAT CAN BE SWITCHED TO AND THE PLANT CAN BE BROUGHT BACK ON IN A SHORT PERIOD OF TIME. OTHER EQUIPMENT FAILURES WILL HAVE THE PLANT DOWN UNTIL MAINTENANCE REPAIRS ARE COMPLETE. CLEAN OUT THE SYSTEM AS THE REMAINING IN-SERVICE EQUIPMENT ALLOWS.**

Steps		Key Points	PPE/Hazards
1.	Clean out the system as the situation dictates.		
2.	Shut down equipment.		
3.	Isolate equipment as necessary for repairs.		

### Training Notes:

- 1.
- 2.
- 3.
- 4.
- 5.



*Conda Phosphate Operations*

## OPERATIONS PROCEDURE ACKNOWLEDGEMENT

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TRAINEE: \_\_\_\_\_

DATE: \_\_\_\_\_





*Conda Phosphate Operations*  
**Standard Operating Procedures**

**Wash plant**

**Normal Shut Down**

**Wash plant-01**  
**2/28/03**

Reviewed by: \_\_\_\_\_

Date: \_\_\_\_\_

**Objective:** To provide operations personnel with step-by-step instruction on how to perform shut down of the Wash plant.

**Requirements:** A & B Wash plant operators need to have a basic working knowledge of the Wash plant process.

**Required Documents:**

**Tools and Equipment:** Pipe wrench

PPE	Hazards	Environmental Considerations
<ul style="list-style-type: none"><li>• Hardhat</li><li>• Safety glasses</li><li>• Hearing protection</li><li>• Safety toed footwear</li><li>• Work gloves</li></ul>	<ul style="list-style-type: none"><li>• Moving conveyors</li><li>• Rotating equipment</li><li>• Pressured pumps</li><li>• Pressured water lines.</li></ul>	

Page 1 of 4

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Normal shutdown.

**TASKS:**

1. Cleaning out the system.
2. Shutting down equipment.

Steps		Key Points	PPE/Hazards
1.	Give red light to reclaim operators. WP-B	B- operator does this	
2.	Clean #7 chute and raw ore bin. Reclaim operator to shut down #7 belt. WP-B	Reclaim operators will clean out their system also.	Using an air lance.
3.	Shut tailings sampler off. WP-A		

**NOTE**

**ROD MILL AND IMPACTOR WILL RUN INDEPENDENTLY, THEY HAVE NO INTERLOCKS.**

4.	Let Scrubber, Impactor, and Rod mill run for 20 minutes. They can now be shut down.	Cleaning out the grinding circuit.	
5.	Turn off Rod mill bull gear greaser.		

**NOTE**

**RECYCLE CYCLONES ARE USED FOR GRADE CONTROL. THEY RECYCLE 3<sup>RD</sup> STAGE PRODUCT BACK TO THE 1<sup>ST</sup> STAGE.**

6.	Put recycle cyclones back to extractors if in service.	B- operator does this	
7.	Slow extractors down as feed clears out.	Maintains cake depth longer. B- operator does this	
8.	Let Ball mill operator know when to take reclaim feed.	B- operator does this	
9.	Lower 3 <sup>rd</sup> stage sump level to 10". Cleans material out of bottom of sump.	Cake depth on extractors will increase	

Normal shutdown.

NOTE		
2 <sup>ND</sup> AND 3 <sup>RD</sup> STAGE PUMPS ARE INTERLOCKED WITH THE 1 <sup>ST</sup> STAGE PUMP.		

Steps		Key Points	PPE/Hazards
10.	Shut 1 <sup>st</sup> stage pump off.	2 <sup>nd</sup> and 3 <sup>rd</sup> stage will shut down by interlocks.	

NOTE		
BALL MILL WATER FLOWS WILL FLUCTUATE WITH PRESSURE CHANGES UNLESS BALL MILL WATER CONTROLLERS ARE SET IN AUTOMATIC.		

11.	Shut reclaim booster pump off.	Let Ball mill operator know water pressure may fluctuate.	
12.	Close 3 <sup>rd</sup> stage make up water butterfly valve.		
13.	Set 3 <sup>rd</sup> stage level controller back to 40".		
14.	Shut scrubber inlet chute spray water off.	2 lines from extractor booster pump.	
15.	Shut east scrubber bearing water off.		
16.	Shut scrubber crows' nest butterfly valve.		
17.	Shut scrubber trommel screen butterfly valve water off.		
18.	Shut rod mill water off		
19.	Open Ball mill floor sump water valve to tailings		
20.	Close Ball mill floor sump water valve to rock sump.		
21.	Close butterfly valve to rock sump.		
22.	Shut down oversize rock sump pump.		
23.	Set floor sump valve switch to tailings.	Air activated valves on floor sump discharge line	

Normal shutdown.

24.	Shut down in-service rod mill product pump down.		
25.	Shut down extractors. WP-B		
26.	Loosen side cloth tighteners. WP-B		
27.	Shut cloth and spray water valves. WP-B		
28.	Shut vacuum pumps off.		

<p align="center"><b>NOTE</b></p> <p align="center"><b>INCOMING RAW WATER TO WATER SOFTENERS IS BLED TO THE DITCH TO KEEP FROM FREEZING IN THE WINTER MONTHS.</b></p>			
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29.	Shut off vacuum pump cooling water at softener supply line.		
30.	Open vacuum cooling water softener discharge drain valve to ditch.		
31.	Switch to south tailings pump.		
32.	Open reclaim water valve to tailings sump.	<b>Make up water for tailings sump.</b>	
33.	Open 2 <sup>nd</sup> stage drain valve.		
34.	Open 3 <sup>rd</sup> stage drain valve.		

**Training Notes:**

- 1.
- 2.
- 3.



Normal shutdown.



*Conda Phosphate Operations*

## **OPERATIONS PROCEDURE ACKNOWLEDGEMENT**

With my signature I am acknowledging that I have read the procedure, I understand the procedure and that I will comply with the procedure.

**TRAINEE:** \_\_\_\_\_

**DATE:** \_\_\_\_\_





**Conda Phosphate Operations**  
**Standard Operating Procedures**

**Wash plant**

**Reclaim Water Outages**

**Wash plant-01**  
**2/28/03**

Reviewed by: \_\_\_\_\_

Date: \_\_\_\_\_

**Objective:** To provide operations personnel with step-by-step instruction on how to perform an emergency shut down due to reclaim water outages.

**Requirements:** Wash plant A & B/ need to have a basic working knowledge of the Wash plant process.

**Required Documents:**

**Tools and Equipment:** Pipe wrench

PPE	Hazards	Environmental Considerations
<ul style="list-style-type: none"><li>• Hardhat</li><li>• Safety glasses</li><li>• Hearing protection</li><li>• Safety toed footwear</li><li>• Work gloves</li></ul>	<ul style="list-style-type: none"><li>• Moving conveyors</li><li>• Rotating equipment</li><li>• Pressured pumps</li><li>• Pressure water lines.</li></ul>	Sulfuric water to tailings sump will need to be diverted to Phos if tailings system is down.

Page 1 of 3

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BUSINESS INFORMATION PRIVILEGES

## Reclaim water outages

### TASKS:

1. Equipment shut down.
2. Pump isolation

### NOTE

EMERGENCY SHUTDOWNS ARE WHEN YOU HAVE NO TIME TO CLEAN OUT THE SYSTEM. RECLAIM WATER OUTAGES WILL CAUSE AN EMERGENCY SHUTDOWN. RECLAIM WATER PUMPS SUPPLY WATER FOR WASH PLANT FUNCTIONS. IF RECLAIM WATER IS LOST, AN EMERGENCY SHUT DOWN WILL OCCUR. THERE ARE 2 RECLAIM WATER PONDS WITH PUMPS THAT CAN SUPPLY RECLAIM WATER TO THE WASH PLANT. IF THE PUMP IN SERVICE GOES DOWN FOR ANY REASON, THE OTHER POND PUMP CAN BE STARTED. THE SHIFT SUPERVISOR IS USUALLY RESPONSIBLE FOR STARTING POND PUMPS. IT WOULD NOT BE UNCOMMON FOR THE OTHER SUPPLY WATER TO BE AVAILABLE IN 30 MINUTES. WASH PLANT RESTART CAN OCCUR WHEN RECLAIM WATER IS BACK IN SERVICE.

Steps		Key points	PPE/Hazards
1.	Push emergency stop button at #16 belt start/stop station.	This will shut down all equipment with the exception of impactor and rod mill. These will have to be shut off independently.	

### NOTE

Fresh water can be routed into the reclaim water system by having the butterfly chain valve open allowing water to flow through check valve. Water will flow through check valve when reclaim water pressure drops below the fresh water pressure. Normally you need more than 20 psi of reclaim water pressure to keep check valve shut.

2.	Shut discharge valve on reclaim booster pump when charging reclaim water system with fresh water.	Discharge valve will need to be open before starting the reclaim pond pump.	
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### Training Notes:

- 1.
- 2.
- 3.

4.



*Conda Phosphate Operations*

## OPERATIONS PROCEDURE ACKNOWLEDGEMENT

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TRAINEE: \_\_\_\_\_

DATE: \_\_\_\_\_





*Conda Phosphate Operations*  
**Standard Operating Procedures**

**Wash plant**

**Power Failure**

**Wash plant-01**  
**2/28/03**

Reviewed by: \_\_\_\_\_

Date: \_\_\_\_\_

**Objective:** To provide operations personnel with step-by-step instruction on how to perform an emergency shut down of Wash plant.

**Requirements:** Wash plant A & B/ Wash plant operators need a basic working knowledge of the Wash plant process.

**Required Documents:**

**Tools and Equipment:** Pipe wrench

PPE	Hazards	Environmental Considerations
<ul style="list-style-type: none"><li>• Hardhat</li><li>• Safety glasses</li><li>• Hearing protection</li><li>• Safety toed footwear</li><li>• Work gloves</li></ul>	<ul style="list-style-type: none"><li>• Moving conveyors</li><li>• Rotating equipment</li><li>• Pressured pumps</li><li>• Pressured water lines.</li></ul>	Sulfuric water to tailings sump will need to be diverted to Phos if tailings system is down.

## Power Failure

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### TASKS:

1. Water isolations
2. System clean out

### NOTE

**EMERGENCY SHUTDOWNS ARE WHEN YOU HAVE NO TIME TO CLEAN OUT THE SYSTEM. ELECTRICAL POWER FAILURES WILL REQUIRE CERTAIN VALVES TO BE SHUT. POWER FAILURES WILL BE ANY WHERE FROM A SHORT-TERM OUTAGE (A FEW SECONDS OR MINUTES) OR OF A LONGER DURATION. A PLANT WIDE OUTAGE WILL SHUT POWER OFF TO ALL EQUIPMENT. A PARTIAL WASH PLANT OUTAGE MAY LEAVE CERTAIN PIECES OF EQUIPMENT OPERATIONAL. WELL AND POND PUMPS MAY CONTINUE TO SUPPLY WATER TO THE WASH PLANT. IF THE TAILINGS SYSTEM IS DOWN, THE WELL AND POND WATER PUMPS WILL NEED TO BE SHUT DOWN.**

Steps		Key Points	PPE/Hazards
1.	Shut pump packing gland valves off of the pumps that were in service. This will help keep slurry from plugging gland water hoses.		
2.	Shut fresh water and reclaim pond pumps off if running.		
3.	When power is restored to all equipment needed to start up, bring the Wash plant back on line.	Refer to Normal start up procedure.	

### Training Notes:

- 1.
- 2.
- 3.
- 4.
- 5.





*Conda Phosphate Operations*

## **OPERATIONS PROCEDURE ACKNOWLEDGEMENT**

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**TRAINEE:** \_\_\_\_\_

**DATE:** \_\_\_\_\_





*Conda Phosphate Operations*  
**Standard Operating Procedures**

**Wash plant**

**Emergency Shut Down**

**Wash plant-01**  
**2/28/03**

Reviewed by: \_\_\_\_\_

Date: \_\_\_\_\_

**Objective:** To provide operations personnel with step-by-step instruction on how to perform an emergency shut down of Wash plant.

**Requirements:** Wash plant A & B/ Wash plant operators need a basic working knowledge of the Wash plant process.

**Required Documents:**

**Tools and Equipment:** Pipe wrench

### Emergency shut downs.

PPE	Hazards	Environmental Considerations
<ul style="list-style-type: none"> <li>• Hardhat</li> <li>• Safety glasses</li> <li>• Hearing protection</li> <li>• Safety toed footwear</li> <li>• Work gloves</li> </ul>	<ul style="list-style-type: none"> <li>• Moving conveyors</li> <li>• Rotating equipment</li> <li>• Pressured pumps</li> <li>• Pressured water lines</li> </ul>	Sulfuric water to tailings sump will need to be diverted to Phos if tailings system is down.

**TASKS:** List ALL tasks within this procedure.

1. Water isolations
2. Pump isolation and draining
3. Tank draining

### NOTE

**EMERGENCY SHUTDOWNS ARE WHEN YOU HAVE NO TIME TO CLEAN OUT THE SYSTEM. ELECTRICAL POWER FAILURES, CRITICAL EQUIPMENT FAILURES, AND RECLAIM WATER OUTAGES WOULD CLASSIFY AS EMERGENCY SHUTDOWNS.**

Steps		Key Points	PPE/Hazards
1.	Push emergency stop buttons in control room or upstairs belt start/stop station.	Shut down all interlocking Wash plant equipment.	
2.	Shut down remaining equipment that is running.		

### Training Notes:

- 1.
- 2.
- 3.
- 4.
- 5.

Emergency shut downs.



*Conda Phosphate Operations*

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**TRAINEE:** \_\_\_\_\_

**DATE:** \_\_\_\_\_





*Conda Phosphate Operations*  
**Standard Operating Procedures**

**Wash plant**

**Long Term Shut Down**

**Wash plant-01**  
**2/28/03**

Reviewed by: \_\_\_\_\_

Date: \_\_\_\_\_

**Objective:** To provide operations personnel with step-by-step instruction on how to perform a long term shut down.

**Requirements:** Wash plant A & B/ need to have a basic working knowledge of the Wash plant process.

**Required Documents:**

**Tools and Equipment:** Pipe wrench

PPE	Hazards	Environmental Considerations
<ul style="list-style-type: none"><li>• Hardhat</li><li>• Safety glasses</li><li>• Hearing protection</li><li>• Safety toed footwear</li><li>• Work gloves</li></ul>	<ul style="list-style-type: none"><li>• Moving conveyors</li><li>• Rotating equipment</li><li>• Pressured pumps</li><li>• Pressured water lines.</li></ul>	

## Long term shutdown

### Tasks:

1. Cleaning out the system.
2. Shutting down the equipment.
3. Draining and isolating equipment for long term shut down

Steps		Key Points	PPE/Hazards
1.	Give red light to reclaim operators. WP-B		
2.	Clean #7 chute and raw ore bin. WP-B	Reclaim operators will clean out their system also.	Using an air lance.
3.	Shut tailings sampler off. WP-A		

### NOTE

**ROD MILL AND IMPACTOR WILL RUN INDEPENDENTLY, THEY HAVE NO INTERLOCKS.**

4.	Let Scrubber, Impactor, and Rod mill run for 20 minutes. They can now be shut down.	Cleaning out the grinding circuit.	
5.	Turn off Rod mill bull gear greaser.		

### NOTE

**RECYCLE CYCLONES ARE USED FOR GRADE CONTROL. THEY RECYCLE 3<sup>RD</sup> STAGE PRODUCT BACK TO THE 1<sup>ST</sup> STAGE.**

6.	Put recycle cyclones back to extractors if in service. WP-B		
7.	Slow extractors down as feed clears out. WP-B	Maintains cake depth longer.	
8.	Let Ball mill operator know when to take reclaim feed. WP-B		
9.	Lower 3 <sup>rd</sup> stage sump level to 10". Cleans material out of bottom of sump.	Cake depth on extractors will increase	



# Long term shutdown

## NOTE

**2<sup>ND</sup> AND 3<sup>RD</sup> STAGE PUMPS ARE INTERLOCKED WITH THE 1<sup>ST</sup> STAGE PUMP.**

	Steps	Key Points	PPE/Hazards
10.	Shut 1 <sup>st</sup> stage pump off.	2 <sup>nd</sup> and 3 <sup>rd</sup> stage will shut down by interlocks.	

## NOTE

**BALL MILL WATER FLOWS WILL FLUCTUATE WITH PRESSURE CHANGES UNLESS BALL MILL WATER CONTROLLERS ARE SET IN AUTOMATIC.**

11.	Shut reclaim booster pump off.	Let Ball mill operator know water pressure may fluctuate.	
12.	Close 3 <sup>rd</sup> stage make up water butterfly valve.		
13.	Set 3 <sup>rd</sup> stage level controller back to 40".		
14.	Shut scrubber inlet chute spray water off.	2 lines from extractor booster pump.	
15.	Shut east scrubber bearing water off.		
16.	Shut scrubber crows' nest butterfly valve.		
17.	Shut scrubber trommel screen butterfly valve water off.		
18.	Shut rod mill water off		
19.	Open Ball mill floor sump water valve to tailings		
20.	Close Ball mill floor sump water valve to rock sump.		
21.	Close butterfly valve to rock sump.		
22.	Shut down oversize rock sump pump.		
23.	Set floor sump valve switch to tailings.	Air activated valves on floor sump discharge line	

### Long term shutdown

	Steps	Key Points	PPE/Hazards
24.	Shut down in-service rod mill product pump down.		
25.	Shut down extractors. WP-B		
26.	Loosen side cloth tighteners. WP-B		
27.	Shut cloth and spray water valves. WP-B		
28.	Shut vacuum pumps off.		

<b>NOTE</b>
<b>INCOMING RAW WATER TO WATER SOFTENERS IS BLED TO THE DITCH TO KEEP FROM FREEZING IN THE WINTER MONTHS.</b>

29.	Shut off vacuum pump cooling water at softener supply line.		
30.	Open vacuum cooling water softener discharge drain valve to ditch.		
31.	Switch to south tailings pump.		
32.	Open reclaim water valve to tailings sump.	<b>Make up water for tailings sump.</b>	
33.	Open 2 <sup>nd</sup> stage drain valve.		
34.	Open 3 <sup>rd</sup> stage drain valve.		
35.	Isolate all water to the Wash plant.		
36.	Drain tanks and blow out all lines.	<b>Long-term isolation.</b>	

### Training Notes:

- 1.
- 2.
- 3.
- 4.
- 5.



*Conda Phosphate Operations*

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**DATE:** \_\_\_\_\_